**Amendments to the Claims:**

1. (Currently Amended) Image processing system for generating a multidimensional adaptive oriented filter to be applied to the point intensities of an image formed in a number d of dimensions, comprising:

analyzing means comprising means (5, fi) to estimate at each image point a probability measure (Fi) of the presence of a type of feature of interest which can be an elongated anisotropic feature or a generally circular or spherical isotropic feature and to determine from said probability measure a weighting control model (10) yielding a weighting control vector (11, VC) for the user to control synthesized adaptive kernels at each image point; and

synthesizing means for generating filter kernels at each image point adapted to the type of the features of interest, which filter kernels are controlled by the weighting control vector.

2. (Original) The image processing system of Claim 1, wherein the synthesizing means comprises means for generating:

filtering means called "pre-mixing filtering means" comprising combining means (30, XH) dependent on the type of the image features having inputs for the weighting control vector (11, VC) and the image data [I(x)] and having an output for weighted adaptive kernels (35, H) adapted to the type of the image features to produce the filtered image signal [H(x)].

3. (Previously Presented) The image processing system of Claim 1, wherein the synthesizing means comprises means for generating:

filtering means called "post-mixing filtering means" comprising both isotropic and anisotropic filtering means [15, gi)] applied independently of the type of the image features, whose outputs (Gi) are combined at each image point and adapted using the weighting control vector (11, VC) to produce the filtered image signal [G(x)].

4. (Previously Presented) The image processing system of Claim 1, wherein the analyzing means comprises a number m of operators (f1,..,fi,..,fm), which outputs at each current point of the image the probability measure (F1,..,Fi,..,Fm) of presence of features of interest among the m types of different features in the image to be filtered.

5. (Previously Presented) The image processing system of Claim 1, wherein the analyzing means comprises a combining operator (10, Xu), called user operator, which receives at its input the probability measures (F1,..,Fi,..,Fm) of presence of different types of features for forming the weighting control model, which provides at its outputs the control vector (VC) of k components (C1,..,Ci,..,Ck), for controlling the adaptive kernels of the synthesized filters.

6. (Previously Presented) The image processing system of Claim 1, wherein the features of interest are chosen among anisotropic features and isotropic features.

7. (Original) The image processing system of Claim 6, wherein the synthesizing means comprises, in the "pre-mixing filtering means", a combining operator (30, XH), which receives at its input, the control vector VC and the image data I(x) and which provides at its output an adaptive kernel (H) that is adapted to the orientation of the anisotropic oriented features and/or to the dimensions of the isotropic features to be filtered or enhanced by the weighting parameters defined by the control vector (VC).

8. (Original) The image processing system of Claim 6, wherein the synthesizing means comprises, in the "post-mixing filtering means", a number m of different filtering means (g1,..,gi,..,gm), which are applied independently of the types of the features examined in the image, whose number m corresponds to the number m of features of different types to be processed and whose outputs (G1,..,Gi,..,Gm) are

mixed in a combination operator (XG), which is controlled by the control vector (VC) to produce the filtered image signal [G(x)].

9. (Original) The image processing system of Claim 8, wherein the combination operator (XG) is a weighted sum of the results of the different filtering means (g1,..,gi,..,gm).

10. (Previously Presented) The image processing system of Claim 2, wherein a user control interface (158) is provided for the user to control the weighting parameters (C1,..,Ci,..,Ck) of the control vector (VC); for selecting the "pre-mixing filtering means" and/or the "post-mixing filtering means"; for varying the strength of filtering or enhancement related to the different type of features at the output of the combination operator (XG) while combining the results (G1,..,Gi,..,Gm) to produce the filtered image signal [G(x)] in the "post-mixing filtering means"; and/or at the input of the combination operator (XH) in the "pre-mixing filtering means".

11. (Currently Amended) Image processing method for generating a multidimensional adaptive oriented filter to be applied to point intensities of an image formed in a number (d) of dimensions, the method comprising:

estimating at each image point a probability measure (Fi) of the presence of a type of feature of interest <u>which can be an elongated anisotropic feature or a generally circular or spherical isotropic feature</u>;

determining from said probability measure a weighting control model yielding a weighting control vector (VC) for a user to control synthesized adaptive kernels at each image point; and

generating filter kernels at each image point adapted to the type of the features of interest, which filter kernels are controlled by the weighting control vector.

12. (Previously Presented) Medical examination apparatus comprising means to acquire d-dimensional image data [I(x)], a system as Claimed in Claim 1 and further comprising a display system (154) for visualizing processed images and user control means (158) for selecting weighting parameters and/ or acting on the user operator (10) and/or the selection unit (40).

13. (Original) A computer program product comprising a set of instructions for carrying out the method as claimed in Claim 11.